

Amendments to the Claims:

The following listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A novel-heterogeneous catalytic composition comprising a solid support having deposited thereon a solid catalytically active material that is substantially which is practically insoluble in organic and aqueous variety of liquid media, the said solid catalytically active material consisting of at least one catalytically active anionic entity together entities with group IIA metal ions.
2. (Currently Amended) A heterogeneous catalytic composition catalyst as claimed in claim 1 wherein, the solid catalytically catalytic active material is molecularly well defined.
3. (Currently Amended) A heterogeneous catalytic composition catalyst as claimed in claim 1 wherein, the solid catalytically active material entity is deposited on the external and the pore surfaces of the solid support, pores of which are predominantly of diameter greater than about 20 \AA^0 .
4. (Currently Amended) A heterogeneous catalytic composition catalyst as claimed in claim 1 wherein, the pores of the solid support have having a pore diameters ranging from about $3 - 3000\text{ \AA}^0$.
5. (Currently Amended) A heterogeneous catalytic composition catalyst as claimed in claim 1 wherein, the solid support is a chemically inactive solid material.
6. (Currently Amended) A catalyst heterogeneous catalytic composition as claimed in claim 1 wherein, the porous solid support is porous and is powder, granules, flakes or pellets pallets of regular or irregular shapes, sheets, monolith, ropes or and woven fabric of fibrous solids.

7. (Currently Amended) A catalyst-heterogeneous catalytic composition as claimed in claim 1 wherein, the porous-solid support is porous and is a mechanically robust and thermally stable solid, insoluble in reaction media selected from organic, aqueous, fluorous, non-aqueous ionic liquids and supercritical fluid phases.

8. (Currently Amended) A catalyst-heterogeneous catalytic composition as claimed in claim 1 wherein, the catalytically active anionic entity is insoluble in reaction media, ~~which are~~ selected from organic, aqueous, fluorous-~~flours~~, non-aqueous ionic liquids and supercritical fluid phases.

9. (Currently Amended) A catalyst-heterogeneous catalytic composition as claimed in claim 1 wherein, the solid catalytically active solid-material is a thermally stable solid material having a melting point greater than 100°C.

10. (Currently Amended) A catalyst-heterogeneous catalytic composition as claimed in claim 1 wherein, the solid catalytically active material is a non-subliming solid.

11. (Currently Amended) A catalyst-heterogeneous catalytic composition as claimed in claim 1 wherein the comprising of solid support having deposited thereon the solid catalytically active material entity which remains as a stable composite solid in gas, liquid and gas-liquid phases.

12. (Currently Amended) A catalyst-heterogeneous catalytic composition as claimed in claim 11 wherein, the liquid phase is selected from organic, aqueous, fluorous-~~flours~~, non-aqueous ionic liquids and supercritical fluid phases ~~or-and mixtures mixture~~ thereof containing reactants, products or and promoters.

13. (Currently Amended) A catalyst-heterogeneous catalytic composition as claimed in claim 1, wherein the heterogeneous catalytic composition which remains as a physically stable composite solid in gas or liquid phases over a temperature range of -78 to 300°C.

14. (Currently Amended) A catalyst heterogeneous catalytic composition as claimed in claim 1; wherein the heterogeneous catalytic composition which remains as a physically stable composite solid in gas or liquid phases over pressures pressure-ranging from 5 to 5000 psi.

15. (Currently Amended) A catalyst heterogeneous catalytic composition as claimed in claim 1 wherein, the group II A metal ion used is a cation having +2 charge.

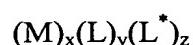
16. (Currently Amended) A catalyst heterogeneous catalytic composition as claimed in claim 1 wherein, the group II A metal used is selected from calcium, strontium, barium and mixtures thereof.

17. (Currently Amended) A catalyst heterogeneous catalytic composition as claimed in claim 1 wherein, the group II A metal used is selected independently or in combination with other group II A metals.

18. (Currently Amended) A catalyst heterogeneous catalytic composition as claimed in claim 1 wherein, the catalytically active anionic entity is an anion having two or more negative charges.

19. (Currently Amended) A catalyst heterogeneous catalytic composition as claimed in claim 1 wherein, the catalytically active anionic entity is independently selected from metal complexes, quaternary compounds, metaloxoanions, polyoxometallates and combinations thereof.

20. (Currently Amended) A catalyst heterogeneous catalytic composition as claimed in claim 19 wherein, the catalytically active anionic entity is a metal complex complexes-having a general formula



wherein M is a catalytic metal atom or an ion of a coordination complex and is a transition metal selected from group III B, IV B, V B, VI B, VII B, I B and or II B of the periodic table of

elements and is selected independently, x is ranging from 1 to 60, L is selected from aliphatic, aromatic and heterocyclic compounds compound containing at least one substituent radical from O, N, S, Se, Te, P, As, Sb, Bi, Si, olefin, and carbene that have having attached thereto an oxy, alkyl, aryl, arylalkyl, alkylaryl, alkoxy-aleoxy, aryloxy-aryloxy, or cycloalkyl group bearing at least one or more negatively charged functional groups independently selected from -SO₃⁻, -SO₂⁻, -PO₃²⁻, -COO⁻, -O⁻, AsO₃²⁻ and -S⁻, y is at least 1, L* is a radical selected from organic anion, inorganic anion and coordinating compounds compound containing at least one substituent radical from O, N, S, Se, Te, P, As, Sb, Bi, Si, olefin, and carbene, =C: that have having attached thereto an oxy, alkyl, aryl, arylalkyl, alkylaryl, alkoxy-aleoxy, aryloxy-aryloxy, or cycloalkyl group and z is Z is ranging from 0 to 7.

21. (Currently Amended) A catalyst heterogeneous catalytic composition as claimed in claim 19 wherein, the catalytically active anionic entity is a quaternary compound is having a general formula



wherein, I = 4 for Y⁺ = N⁺, P⁺, As⁺; I = 3 for Y⁺ = S⁺ and R* is selected independently independently from alkyl, aryl, arylalkyl, alkylaryl, alkoxy-aleoxy, aryloxy-aryloxy, and cycloalkyl bearing at least one or more negatively charged functional groups independently selected from -SO₃⁻, -SO₂⁻, -PO₃²⁻, -COO⁻, -O⁻, AsO₃²⁻ and -S⁻, and Z is an anion selected from organic anion, inorganic anion and coordination complex anion.

22. (Currently Amended) A catalyst heterogeneous catalytic composition as claimed in claim 1 wherein, the solid insoluble catalytically active material is deposited on the solid support along with at least one optionally comprising catalytically inert additive.

23. (Currently Amended) A catalyst heterogeneous catalytic composition as claimed in claim 22 wherein, the catalytically inert additive is an anion having two or more negative charges.

24. (Currently Amended) A catalystheterogeneous catalytic composition as claimed in claim 22 wherein, the catalytically inert additive is an anion, which is independently selected from organic anions, inorganic anions ~~or~~ and combinations in combination thereof.

25. (Currently Amended) A catalystheterogeneous catalytic composition as claimed in claim 22 wherein, the catalytically inert additive is selected from ligand compounds ~~that wherein,~~ ligand compounds contain at least one substituent radical from O, N, S, Se, Te, P, As, Sb, Bi, Si, olefin, and carbene that have having attached thereto an oxy, alkyl, aryl, arylalkyl, alkylaryl, alkoxy aleoxy, aryloxy arlyoxy, or cycloalkyl group bearing at least one or more negatively charged functional groups independently selected from -SO₃⁻, -SO₂⁻, -PO₃²⁻, -COO⁻, -O⁻, AsO₃²⁻ and -S⁻.

26. (Currently Amended) A catalystheterogeneous catalytic composition as claimed in claim 1 wherein, an the amount of the catalytically active anionic entity employed is 40 % weight or less of the heterogeneous catalytic composition.

27. (Currently Amended) A catalystheterogeneous catalytic composition as claimed in claim 22 ~~4~~ wherein an the amount of the catalytically inert additive employed is in the proportion of 0 to 200 weight % ~~200 weight %~~ of the catalytically active anionic entity.

28. (Currently Amended) A catalystheterogeneous catalytic composition as claimed in claim 1 which, is can be employed to catalyze reactions in a gas phase or in a slurry phase.

29. (Currently Amended) A catalystheterogeneous catalytic composition as claimed in claim 1 further comprising a film of high boiling liquid deposited on the solid support~~catalyst~~.

30. (Currently Amended) A novelheterogeneous catalytic composition comprising a solid support having deposited thereon a solid catalytically active material that

is substantially which is practically insoluble in organic and aqueous variety of liquid media,
the said solid catalytically active material consisting of at least one catalytically active anionic
entity entities and at least one catalytically inactive anionic additive that are together with
group IIA metal ions.

31. (Currently Amended) A catalyst heterogeneous catalytic composition as
claimed in claim 30 wherein, the solid catalytically catalytic active material is molecularly
well defined.

32. (Currently Amended) A catalyst heterogeneous catalytic composition as
claimed in claim 30 wherein, the solid catalytically active material entity is deposited on the
external and ~~the~~ pore surfaces of the solid support, pores of which are predominantly of
diameter greater than about 20 \AA^0 .

33. (Currently Amended) A catalyst heterogeneous catalytic composition as
claimed in claim 30 wherein, the pores of the solid support have having a pore diameters
ranging from about $3 - 3000\text{ \AA}^0$.

34. (Currently Amended) A catalyst heterogeneous catalytic composition as
claimed in claim 30 wherein, the solid support is a chemically inactive solid material.

35. (Currently Amended) A catalyst heterogeneous catalytic composition as
claimed in claim 30 wherein, the ~~porous~~ solid support is porous and is powder, granules,
flakes or pellets pallets of regular or irregular shapes, sheets, monolith, ropes or and woven
fabric of fibrous solids.

36. (Currently Amended) A catalyst heterogeneous catalytic composition as
claimed in claim 30 wherein, the ~~porous~~ solid support is porous and is a mechanically robust
and thermally stable solid, insoluble in reaction media selected from organic, aqueous,
fluorous, non-aqueous ionic liquids and supercritical fluid phases.

37. (Currently Amended) A catalystheterogeneous catalytic composition as claimed in claim 30 wherein, the catalytically active anionic entity is insoluble in reaction media, ~~which are selected from organic, aqueous, fluorous fluids, non-aqueous ionic liquids and supercritical fluid phases.~~

38. (Currently Amended) A catalystheterogeneous catalytic composition as claimed in claim 30 wherein, the solid catalytically active solid material is a thermally stable solid material having a melting point greater than 100 °C.

39. (Currently Amended) A catalystheterogeneous catalytic composition as claimed in claim 30 wherein, the solid catalytically active material is a non-subliming solid.

40. (Currently Amended) A catalystheterogeneous catalytic composition as claimed in claim 30 wherein the comprising of solid support having deposited thereon the solid catalytically active material entity which remains as a stable composite solid in gas, liquid and gas-liquid phases.

41. (Currently Amended) A catalystheterogeneous catalytic composition as claimed in claim 40 wherein, the liquid phase is selected from organic, aqueous, fluorous fluids, non-aqueous ionic liquids and supercritical fluid phases and mixtures or mixture thereof containing reactants, products or and promoters.

42. (Currently Amended) A catalystheterogeneous catalytic composition as claimed in claim 30, wherein the heterogeneous catalytic composition which remains as a physically stable composite solid in gas or liquid phases over a temperature range of -78 to 300⁰C.

43. (Currently Amended) A catalystheterogeneous catalytic composition as claimed in claim 30, wherein the heterogeneous catalytic composition which remains as a physically stable composite solid in gas or liquid phases over pressures pressure ranging from 5 to 5000 psi.

44. (Currently Amended) A catalyst-heterogeneous catalytic composition as claimed in claim 30 wherein, the group IIA metal ion used is a cation having +2 charge.

45. (Currently Amended) A catalyst-heterogeneous catalytic composition as claimed in claim 30 wherein, the group IIA metal used is selected from calcium, strontium, barium and mixtures thereof.

46. (Currently Amended) A catalyst-heterogeneous catalytic composition as claimed in claim 30 wherein, the group IIA metal used is selected independently or in combination with other group IIA metals.

47. (Currently Amended) A catalyst-heterogeneous catalytic composition as claimed in claim 30 wherein, the catalytically active anionic entity is an anion having two or more negative charges.

48. (Currently Amended) A catalyst-heterogeneous catalytic composition as claimed in claim 30 wherein, the catalytically active anionic entity is independently selected from metal complexes, quaternary compounds, metaloxoanions, polyoxometallates and combinations thereof.

49. (Currently Amended) A catalyst-heterogeneous catalytic composition as claimed in claim 30 wherein, an the amount of the catalytically active anionic entity employed is 40 % weight or less of the catalyst.

50. (Currently Amended) A catalyst-heterogeneous catalytic composition as claimed in claim 30 wherein an the amount of the catalytically inert additive employed is 0 to 200 weight % ~~200 weight %~~ of the catalytically active anionic entity.

51. (Currently Amended) A catalyst-heterogeneous catalytic composition as claimed in claim 30 which, is can be employed to catalyze reactions in gas phase or in slurry phase.

52. (Currently Amended) A catalyst-heterogeneous catalytic composition as claimed in claim 30 further comprising a film of high boiling liquid deposited on the solid support-catalyst.

53. (Currently Amended) A process for preparing a catalytically active composition comprising a solid support material, said process comprising interacting a solution consisting of a catalytically inactive additive and a catalytically active entity with a solution of group IIA metal cation and obtaining a precipitate,

_____ wherein the catalytically inactive additive is independently selected from anions having at least two or more negative charges, ligand compounds containing at least one substituent radical from O, N, S, Se, Te, P, As, Sb, Bi, Si, and olefin that have, having attached thereto an oxy, alkyl, aryl, arylalkyl, alkylaryl, alkoxy-aleoxy, aryloxy-aryloxy, or cycloalkyl group bearing at least one or more negatively charged functional groups independently selected from -SO_3^- , -SO_2^- , -PO_3^{2-} , -COO^- , -O^- , AsO_3^{2-} and -S^- , and combinations combination thereof;

_____ wherein the catalytically active entity is independently selected from metal complexes, quaternary compounds, metal oxo anions, polyoxometallates and combinations thereof,

_____ wherein the metal complexes have is having a general formula
$$(M)_x(L)_y(L^*)_z$$
 wherein M is a catalytic metal atom or an ion of a coordination complex and is a transition metal selected from group IIIB, IVB, VB, VIB, VIIIB, IB and er-IIB of the periodic table of elements, x is ranging from 1 to 60, L is selected from aliphatic, aromatic and heterocyclic compounds compound containing at least one substituent radical from O, N, S, Se, Te, P, As, Sb, Bi, Si, olefin, and carbene that have having attached thereto an oxy, alkyl, aryl, arylalkyl, alkylaryl, alkoxy-aleoxy, aryloxy-aryloxy, or cycloalkyl group bearing at least one or more negatively charged functional groups independently selected from -SO_3^- , -SO_2^- , -PO_3^{2-} , -COO^- ,

-O⁻, AsO₃²⁻ and -S⁻, y is at least 1, L* is radical selected from organic anion, inorganic anion and coordinating compounds compound containing at least one substituent radical from O, N, S, Se, Te, P, As, Sb, Bi, Si, olefin, and carbene that have, =C: having attached thereto an oxy, alkyl, aryl, arylalkyl, alkylaryl, alkoxy aleoxy, aryloxy arlyoxy, or cycloalkyl group, z is ranging from 0 to 7 and

wherein the quaternary ammonium compound has a general formula



wherein, I = 4 for Y⁺ = N⁺, P⁺, As⁺; I = 3 for Y⁺ = S⁺ and R* is selected independently from alkyl, aryl, arylalkyl, alkylaryl, alkoxy aleoxy, aryloxy arlyoxy, and cycloalkyl bearing at least one or more negatively charged functional groups independently selected from -SO₃⁻, -SO₂⁻, -PO₃²⁻, -COO⁻, -O⁻, AsO₃²⁻ and -S⁻ and Z is an anion selected from organic anion, inorganic anion and or coordination complex anion; and

wherein the group IIA II-A-metal cation is selected from compounds of Ca⁺, Sr⁺ and Ba⁺.

54. (Currently Amended) A process as claimed in claim 53 wherein, the reaction is carried out at a in the temperature ranging from -70 to 200 ⁰C preferably between -5 to 100 ⁰C.

55. (Currently Amended) A process as claimed in claim 53 wherein, an the amount of the catalytically active entity employed is 40 % weight or less of the catalytically active composition.

56. (Currently Amended) A process as claimed in claim 53 wherein, an the amount of the catalytically inert additive employed is in the proportion of 0 to 200 weight % 200 weight % of the catalytically active entity.

57. (Currently Amended) A process as claimed in claim 53 wherein, the catalytically active composition is ~~catalyst can be~~ employed to catalyze reactions in a gas phase or in a slurry phase.

58. (Currently Amended) A process as claimed in claim 53 wherein, a film of high boiling liquid is ~~preferably~~ deposited on the catalytically active composition~~solid catalyst~~.

59. (Currently Amended) A process for the preparation of a heterogeneous catalytic formulation as a solid composite comprised comprising of a porous solid support having deposited thereon a catalytically active solid, said process comprising suspending the porous insoluble solid support in a liquid phase in which the porous solid support is insoluble to form a suspension, simultaneously adding to the suspension to which a solution of a catalytically inert additive, and a catalytically active entity and a solution of group IIA metal cation ~~are added simultaneously with vigorous agitation, and allowing and allowed to age for~~ 1 to 48 hours,

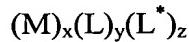
wherein, the porous solid support is a mechanically robust and thermally stable solid in reaction media selected from organic, aqueous, fluorous, non-aqueous ionic liquids and supercritical fluid phases, has having a mean pore diameter in the range of about $3\text{-}3000 \text{ \AA}^0$ and is in a form of existing as powder, granules, flakes or pellets pallets of regular or irregular shapes, sheets, monolith, ropes or and woven fabric of fibrous solids,

wherein ~~and~~ the catalytically inert inactive additive is independently selected from anions having at least two or more negative charges including selected from organic anions, inorganic anions, or a compound containing at least one substituent radical from form-O, N, S, Se, Te, P, As, Sb, Bi, Si, olefin, and carbene that have having attached thereto an oxy, alkyl, aryl, arylalkyl, alkylaryl, alkoxy-aleoxy, aryloxy-aryloxy, or cycloalkyl group bearing at least one or more negatively charged functional groups independently selected from -SO_3^- ,

-SO_2^- , -PO_3^{2-} , -COO^- , -O^- , AsO_3^{2-} and -S^- ,

wherein the catalytically active entity is independently selected from metal complexes, quaternary compounds, metaloxoanions, polyoxometallates and combinations,

wherein the metal complexes have having a general formula



wherein M is a catalytic metal atom or an ion of a coordination complex and is a transition metal selected from group IIIB, IVB, VB, VIB, VIIIB, IB and/or IIB of the periodic table of elements, x is ranging from 1 to 60, L is selected from aliphatic, aromatic and heterocyclic compounds compound containing at least one substituent radical from O, N, S, Se, Te, P, As, Sb, Bi, Si, olefin, and carbene that have having attached thereto an oxy, alkyl, aryl, arylalkyl, alkylaryl, alkoxy-aleoxy, aryloxy-aryloxy, or cycloalkyl group bearing at least one or more negatively charged functional groups independently selected from -SO_3^- , -SO_2^- , -PO_3^{2-} , -COO^- , -O^- , AsO_3^{2-} and -S^- , y is at least 1, L^* is a radical selected from organic anion, inorganic anion and coordinating compounds compound containing at least one substituent radical from O, N, S, Se, Te, P, As, Sb, Bi, Si, olefin, and carbene that have, $=\text{C}\cdot$ having attached thereto an oxy, alkyl, aryl, arylalkyl, alkylaryl, alkoxy-aleoxy, aryloxy-aryloxy, or cycloalkyl group, z is ranging from 0 to 7, and

wherein the quaternary ammonium compound has a general formula



wherein, I = 4 for $\text{Y}^+ = \text{N}^+$, P^+ , As^+ ; I = 3 for $\text{Y}^+ = \text{S}^+$ and R^* is selected independently from alkyl, aryl, arylalkyl, alkylaryl, alkoxy-aleoxy, aryloxy-aryloxy, and cycloalkyl bearing at least one or more negatively charged functional groups independently selected from the group consisting of -SO_3^- , -SO_2^- , -PO_3^{2-} , -COO^- , -O^- , AsO_3^{2-} and -S^- , and Z is an anion selected from organic anion, inorganic anion and coordination complex anion and

wherein the group IIA metal cation is selected from compounds of Ca^{2+} , Sr^{2+} and Ba^{2+} .

60. (Currently Amended) A process as claimed in claim 59 wherein, the reaction is carried out in a ~~the~~ temperature ranging from -70 to 200 $^{\circ}\text{C}$ ~~preferably between -5 to 100~~ $^{\circ}\text{C}$.

61. (Currently Amended) A process as claimed in claim 59 wherein, the solution of the group IIA metal cation solvent used is selected form aqueous, water miscible organic and mixtures mixture thereof.

62. (Currently Amended) A process as claimed in claim 59 wherein, the solution of catalytically inert additive and catalytically active entity and the ~~a~~ solution of group IIA metal cation are added simultaneously over a period of 10 to 1500 min.

63. (Currently Amended) A process as claimed in claim 59 wherein, the solid composite catalyst is recovered by centrifugation, decantation or, gravity settling, or other techniques of solid liquid separation and solids are dried subsequently in a vacuum.

64. - 87. (Canceled).

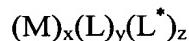
88. (Currently Amended) A process for the preparation of a heterogeneous catalytic formulation as a solid composite comprised comprising of a porous solid support having deposited thereon a catalytically active solid, said process comprising impregnating the porous solid support with a ~~the~~ catalytically active entity and a ~~the~~ catalytically inert additive followed by drying to obtain a dried porous solid support, adding the dried porous solid support having deposited thereon the catalytically active entity and the catalytically inert additive is added to a solution of a group IIA metal compound, with simultaneous agitation, and aging the suspension is aged for 1 to 48 hours with agitation,

wherein the porous solid support is a mechanically robust and thermally stable solid in reaction media selected from organic, aqueous, fluorous, non-aqueous ionic liquids and

supercritical fluid phases, has having a mean pore diameter in the range of about 3-3000 Å⁰ and is in a form of existing as powder, granules, flakes or pellets pallets of regular or irregular shapes, sheets, monolith, ropes or andwoven fabric of fibrous solids and

wherein the catalytically inert inactive additive is independently selected from anions having at least two or more negative charges including which may be organic anions, inorganic anions, or a compound containing at least one substituent radical from form O, N, S, Se, Te, P, As, Sb, Bi, Si, olefin, and carbene that have having attached thereto an oxy, alkyl, aryl, arylalkyl, alkylaryl, alkoxy-aleoxy, aryloxy-aryloxy, or cycloalkyl group bearing at least one or more negatively charged functional groups independently selected from -SO₃⁻, -SO₂⁻, -PO₃²⁻, -COO⁻, -O⁻, AsO₃²⁻ and -S⁻;

wherein the catalytically active entity is independently selected from metal complexes, quaternary compounds, metal oxo anions and polyoxometallates and or combinations thereof,
wherein the metal complexes have having a general formula



wherein M is a catalytic metal atom or an ion of coordination complex and is a transition metal selected from group IIIB, IVB, VB, VIB, VIIB, IB and or IIB of the periodic table of elements, x is from 1 to 60, L is an aliphatic, aromatic or and heterocyclic compound compounds containing at least one substituent radical from O, N, S, Se, Te, P, As, Sb, Bi, Si, olefin, and carbene that have having attached thereto an oxy, alkyl, aryl, arylalkyl, alkylaryl, alkoxy-aleoxy, aryloxy-aryloxy, or cycloalkyl group bearing at least one or more negatively charged functional groups independently selected from -SO₃⁻, -SO₂⁻, -PO₃²⁻, -COO⁻, -O⁻, AsO₃²⁻ and -S⁻, y is at least 1, L* is a radical selected from organic anion, inorganic anion and coordinating compound containing at least one substituent radical from O, N, S, Se, Te, P, As, Sb, Bi, Si, olefin, and carbene that have, =C: having attached thereto an oxy, alkyl,

aryl, arylalkyl, alkylaryl, alkoxy-alkoxy, aryloxy-aryloxy, or cycloalkyl group, z is from 0 to 7 and

wherein the quaternary ammonium compound has a general formula



wherein, I = 4 for $Y^+ = N^+$, P^+ , As^+ ; I = 3 for $Y^+ = S^+$ and R^* is selected independently from alkyl, aryl, arylalkyl, alkylaryl, alkoxy-alkoxy, aryloxy-aryloxy, or cycloalkyl bearing at least one or more negatively charged functional groups independently selected from $-SO_3^-$, $-SO_2^-$, $-PO_3^{2-}$, $-COO^-$, $-O^-$, AsO_3^{2-} and $-S^-$ and Z is an anion selected from organic anion, inorganic anion or coordination complex anion, and

wherein the group IIA metal cation is are selected from compounds of Ca^{2+} , Sr^{2+} and Ba^{2+} .

89. (Currently Amended) A process as claimed in claim 88, wherein the process is carried out in a the temperature ranging from -70 to $200^{\circ}C$ preferably between -5 to 100⁰C.

90. (Currently Amended) A process as claimed in claim 88 wherein, the solution of the group IIA compound includes a solvent that is aqueous, water miscible organic or a mixture thereof.

91. (Currently Amended) A process as claimed in claim 88 wherein, the porous solid support having deposited thereon the catalytically active entity and the catalytically inert additive is added to the a-solution of group IIA metal compound, with simultaneous agitation, over a period of 10 to 1500 min.

92. (Currently Amended) A process as claimed in claim 88 wherein, the solid composite catalyst is recovered by centrifugation, decantation, or gravity settling, or other techniques of solid liquid separation and solids are dried subsequently in a vacuum.

93. (Currently Amended) A process for the preparation of a heterogeneous catalytic formulation as a solid composite comprised comprising of a porous solid support

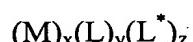
having deposited thereon a catalytically active solid, said process comprising impregnating is characterized by impregnation of the porous solid support with a solution of a catalytically inactive additive and a catalytically active entity, followed by drying and suspending the porous solid support having deposited thereon the catalytically inactive additive and the catalytically active entity in a water immiscible solvent and adding to which-a solution of group IIA metal compound solution is added-with vigorous agitation and concurrent removal of low boiling or azeotropic fraction of solvent, and aging the suspension is allowed to age for 1 to 48 hours,

wherein the porous solid support is a mechanically robust and thermally stable solid in reaction media selected from organic, aqueous, fluorous, non-aqueous ionic liquids and supercritical fluid phases, has having a mean pore diameter in the range of about 70-3000 Å⁰ and is in a form of existing as powder, granules, flakes or pellets pallets of regular or irregular shapes, sheets, monolith, ropes or and woven fabric of fibrous solids and

wherein the catalytically inactive additive is independently selected from anions having at least two or more negative charges including which may be organic anions, inorganic anions, or a compound containing at least one substituent radical from form O, N, S, Se, Te, P, As, Sb, Bi, Si, olefin, and carbene that have having attached thereto an oxy, alkyl, aryl, arylalkyl, alkylaryl, alkoxy-aleoxy, aryloxy-aryloxy, or cycloalkyl group bearing at least one or more negatively charged functional groups independently selected from -SO₃⁻, -SO₂⁻, -PO₃²⁻, -COO⁻, -O⁻, AsO₃²⁻ and -S⁻;

wherein the catalytically active entity is independently selected from metal complexes, quaternary compounds, métal oxo anions and polyoxometallates and or combinations thereof,

wherein the metal complexes have having a general formula



wherein M is a catalytic metal atom or an ion of coordination complex and is a transition metal selected from group IIIB, IVB, VB, VIB, VIIIB, IB and or IIB of the periodic table of elements, x is from 1 to 60, L is an aliphatic, aromatic or and heterocyclic compound compounds containing at least one substituent radical from O, N, S, Se, Te, P, As, Sb, Bi, Si, olefin, and carbene that have having attached thereto an oxy, alkyl, aryl, arylalkyl, alkylaryl, alkoxy-aleoxy, aryloxy-arlyoxy, or cycloalkyl group bearing at least one or more negatively charged functional groups independently selected from -SO_3^- , -SO_2^- , -PO_3^{2-} , -COO^- , -O^- , AsO_3^{2-} and -S^- , y is at least 1, L^* is radical-selected from organic anion, inorganic anion and coordinating compound containing at least one substituent radical from O, N, S, Se, Te, P, As, Sb, Bi, Si, olefin, and carbene that have, $=\text{C}$: having attached thereto an oxy, alkyl, aryl, arylalkyl, alkylaryl, alkoxy-aleoxy, aryloxy-arlyoxy, or cycloalkyl group, z is from 0 to 7, and
wherein the quaternary ammonium compound has a general formula



wherein, I = 4 for $Y^+ = \text{N}^+$, P^+ , As^+ ; I = 3 for $Y^+ = \text{S}^+$ and R^* is selected independently from alkyl, aryl, arylalkyl, alkylaryl, alkoxy-aleoxy, aryloxy-arlyoxy, or cycloalkyl bearing at least one or more negatively charged functional groups independently selected from -SO_3^- , -SO_2^- , -PO_3^{2-} , -COO^- , -O^- , AsO_3^{2-} and -S^- and Z is anion selected from organic anion, inorganic anion or coordination complex anion, and

wherein the group IIA metal compound cation-is are-selected from compounds of Ca^{2+} , Sr^{2+} and Ba^{2+} .

94. (Currently Amended) A process as claimed in claim 93 wherein the process is carried out in a the temperature ranging from -70 to 200°C .

95. (Currently Amended) A process as claimed in claim 93 wherein, a the solvent employed to form a solution of the group IIA metal compound ion-is aqueous, water miscible organic or a mixture thereof.

96. (Currently Amended) A process as claimed in claim 93 wherein, the solvent employed is water immiscible organic solvent, has a having boiling point in a the range of 40 to 200 °C.

97. (Currently Amended) A process according to claim 93 wherein, the solid composite catalyst is recovered by centrifugation, decantation or gravity settling, ~~or other techniques of solid liquid separation~~ and solids are dried subsequently in a vacuum.

98. (Currently Amended) A process for the preparation of a heterogeneous catalytic formulation as a solid composite comprising depositing of porous solid support having deposited thereon a group IIA metal compound on a porous solid support followed by drying and suspending the porous solid support having deposited thereon the group IIA metal compound in a water immiscible solvent to which a solution of a catalytically active entity and a catalytically inactive additive is added with vigorous agitation and concurrent removal of low boiling or azeotropic fraction of solvent, and aging the suspension ~~is allowed to age~~ for 1 to 48 hours,

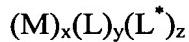
_____ wherein the porous solid support is a mechanically robust and thermally stable solid in reaction media selected from organic, aqueous, fluorous, non-aqueous ionic liquids and supercritical fluid phases, has having a mean pore diameter in the range of about 3-3000 Å° and is in a form of existing as powder, granules, flakes or pellets pallets of regular or irregular shapes, sheets, monolith, ropes or and woven fabric of fibrous solids and

_____ wherein the catalytically inactive additive is independently selected from anions having at least two or more negative charges including which may be organic anions, inorganic anions, or a compound containing at least one substituent radical from form O, N, S, Se, Te, P, As, Sb, Bi, Si, olefin, and carbene that have having attached thereto an oxy, alkyl, aryl, arylalkyl, alkylaryl, alkoxy-aleoxy, aryloxy-aryloxy, or cycloalkyl group bearing at least one or more negatively charged functional groups independently selected from -SO₃⁻,

-SO_2^- , -PO_3^{2-} , -COO^- , -O^- , AsO_3^{2-} and -S^- ;

wherein the catalytically active entity is independently selected from metal complexes, quaternary compounds, metal oxo anions and polyoxometallates and/or combinations thereof,

wherein the metal complexes have having a general formula



wherein M is a catalytic metal atom or an ion of coordination complex and is a transition metal selected from group IIIB, IVB, VB, VIB, VIIIB, IB and/or IIB of the periodic table of elements, x is from 1 to 60, L is an aliphatic, aromatic or and heterocyclic compound compounds containing at least one substituent radical from O, N, S, Se, Te, P, As, Sb, Bi, Si, olefin, and carbene that have having attached thereto an oxy, alkyl, aryl, arylalkyl, alkylaryl, alkoxy-aleoxy, aryloxy-arylxy, or cycloalkyl group bearing at least one or more negatively charged functional groups independently selected from -SO_3^- , -SO_2^- , -PO_3^{2-} , -COO^- , -O^- , AsO_3^{2-} and -S^- , y is at least 1, L^* is a radical selected from organic anion, inorganic anion and coordinating compound containing at least one substituent radical from O, N, S, Se, Te, P, As, Sb, Bi, Si, olefin, and carbene that have, -C: having attached thereto an oxy, alkyl, aryl, arylalkyl, alkylaryl, alkoxy-aleoxy, aryloxy-arylxy, or cycloalkyl group, z is from 0 to 7, and

wherein the quaternary ammonium compound has a general formula



wherein; I = 4 for $\text{Y}^+ = \text{N}^+$, P^+ , As^+ ; I = 3 for $\text{Y}^+ = \text{S}^+$; and R^* is selected independently from alkyl, aryl, arylalkyl, alkylaryl, alkoxy-aleoxy, aryloxy-arylxy, or cycloalkyl bearing at least one or more negatively charged functional groups independently selected from -SO_3^- , -SO_2^- , -PO_3^{2-} , -COO^- , -O^- , AsO_3^{2-} and -S^- , and Z is anion selected from organic anion, inorganic anion or coordination complex anion and

wherein the group IIA metal compound is ~~eation are~~ selected from compounds of Ca⁺², Sr⁺² and Ba⁺².

99. (Currently Amended) A process as claimed in claim 98 wherein the process is carried out in a ~~the~~ temperature ranging from -70 to 200⁰C.

100. (Currently Amended) A process as claimed in claim 98 wherein; a ~~the~~ solvent employed to form a solution of the group IIA metal compound ion is aqueous, water miscible organic or a mixture thereof.

101. (Currently Amended) A process as claimed in claim 98 wherein; the solvent employed is water immiscible organic solvent has a, ~~having~~ boiling point in a ~~the~~ range of 40 to 200⁰C.

102. (Currently Amended) A process as claimed in claim 98 wherein, the solid composite catalyst is recovered by centrifugation, decantation, or gravity settling, -or other techniques of solid liquid separation and solids are dried subsequently in a vacuum.

103. (Currently Amended) A process for the preparation of a heterogeneous catalytic formulation as a solid composite comprising fluidizing a porous solid support in a flow ~~the current of gases~~ gasses and spraying a solution of a catalytically active entity and a catalytically inert additive ~~in such a way~~ that the catalytically active entity and the catalytically inert additive are deposited on the porous solid support, wherein the fluidizing fluidization of solid is continued for 1 to 48 hours, and subsequently spraying a solution of a group IIA metal compound, is subsequently sprayed and fluidizing fluidization of solid is further continued for 1 to 48 hours, and recovering solids are recovered,

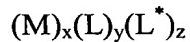
wherein, the porous solid support is a mechanically robust and thermally stable solid in reaction media selected from organic, aqueous, fluorous, non-aqueous ionic liquids and supercritical fluid phases, has ~~having~~ a mean pore diameter in the range of about 70-3000 A⁰

and is in a form of existing as powder, granules, flakes or pellets pallets of regular or irregular shapes, sheets, monolith, ropes or and woven fabric of fibrous solids and

wherein the catalytically inert inactive additive is independently selected from anions having at least two or more negative charges including which may be organic anions, inorganic anions, or a compound containing at least one radical from form O, N, S, Se, Te, P, As, Sb, Bi, Si, olefin, and carbene that have having attached thereto an oxy, alkyl, aryl, arylalkyl, alkylaryl, alkoxy-aleoxy, aryloxy-aryloxy, or cycloalkyl group bearing at least one or more negatively charged functional groups independently selected from -SO_3^- , -SO_2^- , -PO_3^{2-} , -COO^- , -O^- , AsO_3^{2-} and -S^- ;

wherein the catalytically active entity is independently selected from metal complexes, quaternary compounds, metal oxo anions and polyoxometallates and or combinations thereof,

wherein the metal complexes have having a general formula



wherein M is a catalytic metal atom or an ion of coordination complex and is a transition metal selected from group IIIB, IVB, VB, VIB, VIIIB, IB and or IIB of the periodic table of elements, x is from 1 to 60, L is an aliphatic, aromatic or and heterocyclic compound compounds containing at least one substituent radical from O, N, S, Se, Te, P, As, Sb, Bi, Si, olefin, and carbene that have having attached thereto an oxy, alkyl, aryl, arylalkyl, alkylaryl, alkoxy-aleoxy, aryloxy-aryloxy, or cycloalkyl group bearing at least one or more negatively charged functional groups independently selected from -SO_3^- , -SO_2^- , -PO_3^{2-} , -COO^- , -O^- , AsO_3^{2-} and -S^- , y is at least 1, L^* is a radical selected from organic anion, inorganic anion and coordinating compound containing at least one substituent radical from O, N, S, Se, Te, P, As, Sb, Bi, Si, olefin, and carbene that have, C: having attached thereto an oxy, alkyl, aryl, arylalkyl, alkylaryl, alkoxy-aleoxy, aryloxy-aryloxy, or cycloalkyl group, z is from 0 to 7, and

wherein the quaternary ammonium compound has a general formula



wherein; I = 4 for $Y^+ = N^+, P^+, As^+$; I = 3 for $Y^+ = S^+$ and R^* is selected independently from alkyl, aryl, arylalkyl, alkylaryl, alkoxy-alcoxy, aryloxy-aryloxy, or cycloalkyl bearing at least one or more negatively charged functional groups independently selected from $-SO_3^-$, $-SO_2^-$, $-PO_3^{2-}$, $-COO^-$, $-O^-$, AsO_3^{2-} and $-S^-$, and Z is an anion selected from organic anion, inorganic anion or coordination complex anion, and

wherein the group IIA metal compound includes a cation are selected from compounds of Ca^{+2} , Sr^{+2} and Ba^{+2} .

104. (Currently Amended) A process as claimed in claim 103 wherein the process is carried out in a the temperature ranging from -70 to 200⁰C.

105. (Currently Amended) A process as claimed in claim 103 wherein; the solvent employed to form a solution of the group IIA metal compound ion is aqueous, water miscible organic or a mixture thereof.

106. (Currently Amended) A process for the preparation of a heterogeneous catalytic formulation as a solid composite comprising of tumbling a porous solid support in a the rotating pan under a flow current of gases gasses, spraying a solution of a catalytically active entity and a catalytically inert additive is sprayed in such a way that the catalytically active entity and the catalytically inert additive are deposited on the porous solid support, the tumbling of solid is continued continuing for 1 to 48 hours, and subsequently spraying a solution of a group IIA metal compound, is subsequently sprayed and then tumbling of solid is further continued for 1 to 48 hours, and solids are recovered,

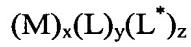
wherein the porous solid support is a mechanically robust and thermally stable solid in reaction media selected from organic, aqueous, fluorous, non-aqueous ionic liquids and supercritical fluid phases, has having a mean pore diameter in the range of about 70-3000 \AA^0

and is in a form of existing as powder, granules, flakes or pellets pallets of regular or irregular shapes, sheets, monolith, ropes or and woven fabric of fibrous solids and

wherein the catalytically inert inactive additive is independently selected from anions having at least two or more negative charges including which may be organic anions, inorganic anions, or a compound containing at least one substituent radical from form O, N, S, Se, Te, P, As, Sb, Bi, Si, olefin, and carbene that have having attached thereto an oxy, alkyl, aryl, arylalkyl, alkylaryl, alkoxy-aleoxy, aryloxy-aryloxy, or cycloalkyl group bearing at least one or more negatively charged functional groups independently selected from -SO_3^- , -SO_2^- , -PO_3^{2-} , -COO^- , -O^- , AsO_3^{2-} and -S^- ;

wherein the catalytically active entity is independently selected from metal complexes, quaternary compounds, metal oxo anions and polyoxometallates and or combinations thereof,

wherein the metal complexes have having a general formula



wherein M is a catalytic metal atom or an ion of coordination complex and is a transition metal selected from group IIIB, IVB, VB, VIB, VIIIB, IB and or IIB of the periodic table of elements, x is from 1 to 60, L is an aliphatic, aromatic or and heterocyclic compound compounds containing at least one substituent radical from O, N, S, Se, Te, P, As, Sb, Bi, Si, olefin, and carbene that have having attached thereto an oxy, alkyl, aryl, arylalkyl, alkylaryl, alkoxy-aleoxy, aryloxy, or cycloalkyl group bearing at least one or more negatively charged functional groups independently selected from -SO_3^- , -SO_2^- , -PO_3^{2-} , -COO^- , -O^- , AsO_3^{2-} and -S^- , y is at least 1, L^* is a radical selected from organic anion, inorganic anion and coordinating compound containing at least one substituent radical from O, N, S, Se, Te, P, As, Sb, Bi, Si, olefin, and carbene that have, $=\text{C}$: having attached thereto an oxy, alkyl, aryl, arylalkyl, alkylaryl, alkoxy-aleoxy, aryloxy-aryloxy, or cycloalkyl group, z is from 0 to 7 and

wherein the quaternary ammonium compound has a general formula



wherein; I = 4 for $Y^+ = N^+, P^+, As^+$; I = 3 for $Y^+ = S^+$ and R^* is selected independently from alkyl, aryl, arylalkyl, alkylaryl, alkoxy-alkoxy, aryloxy-aryloxy, or cycloalkyl bearing at least one or more negatively charged functional groups independently selected from $-SO_3^-$, $-SO_2^-$, $-PO_3^{2-}$, $-COO^-$, $-O^-$, AsO_3^{2-} and $-S^-$, and Z is anion selected from organic anion, inorganic anion or coordination complex anion and

wherein the group IIA metal compound includes a cation are-selected from compounds of Ca^{+2} , Sr^{+2} and Ba^{+2} .

107. (Currently Amended) A process as claimed in claim 106 wherein the process is carried out in a the temperature ranging from -70 to 200⁰C.

108. (Currently Amended) A process as claimed in claim 106 wherein, a the solvent employed to form the solutions is aqueous, water miscible organic or a mixture thereof.

109. (Currently Amended) A process as claimed in claim 106 wherein, the solutions are sprayed simultaneously or sequentially.

110. (Canceled).